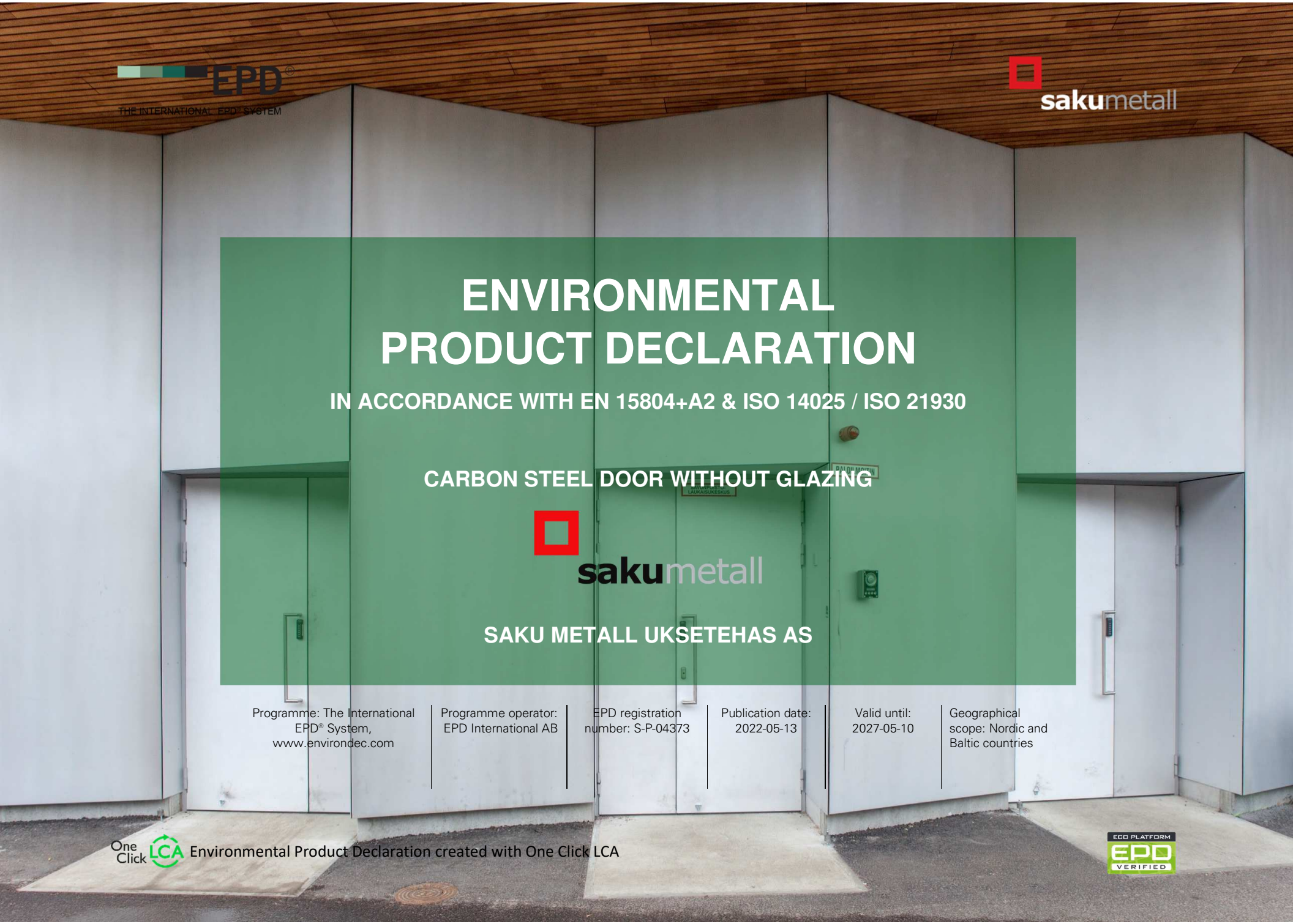


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

CARBON STEEL DOOR WITHOUT GLAZING

SAKU METALL UKSETEHAS AS

Programme: The International EPD® System, www.environdec.com	Programme operator: EPD International AB	EPD registration number: S-P-04373	Publication date: 2022-05-13	Valid until: 2027-05-10	Geographical scope: Nordic and Baltic countries

Environmental Product Declaration created with One Click LCA

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	Saku Metall Uksetehas AS
Address	Põrguvälja tee 25, Lehmja, 75306 Estonia
Contact details	info@sakumetall.ee
Website	https://sakumetall.ee

PRODUCT IDENTIFICATION

Product name	Carbon steel door without glazing
Place(s) of production	Lehmja, Estonia
CPC code	4212 Doors, windows and their frames and thresholds for doors, of iron, steel or aluminium

The International EPD System
EPDs within the same product category but from different programmes may not be comparable.

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The International EPD System
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021) is used. c-PCR 007 Windows and doors
EPD author	Janno Jegers, Saku Metall AS
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Verification date	2022-05-09
EPD verifier	Silvia Vilčeková, Silcert, Ltd
EPD number	S-P-04373
ECO Platform nr.	-
Publishing date	2022-05-13
EPD valid until	2027-05-10

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Saku Metall carbon steel doors are predominantly made of hot dip galvanized sheet metal and are powder coated.
Study is a weighted average of 7 different door models and consist of fire resistant doors, security doors and a door without any fire resistance rating.

PRODUCT APPLICATION

Carbon steel doors are used in different residential and non-residential buildings. Doors with fire resistance rating are used in fire partition walls. Security doors are used mainly to prevent unauthorized entry from intruders.

TECHNICAL SPECIFICATIONS

Following are doors used in the study.

	Product	Declared unit weight, kg
Model 1	Steel door without fire resistance rating	32,82
Model 2	EI30 fire resistant steel door	39,35
Model 3	EI30 RC3 fire resistant security steel door	45,76
Model 4	EI60 fire resistant steel door	45,42
Model 5	EI60 RC3 fire resistant security steel door	55,64
Model 6	EI60 RC4 fire resistant security steel door	56,01
Model 7	EI120 fire resistant steel door	61,91

PRODUCT STANDARDS

All products are manufactured and certified according to EN 14351-1:2006+A2:2016 standard.
All fire resistant doors are manufactured and certified according to EN 16034:2014 standard.
All security doors are manufactured and certified according to EN 1627:2021 standard.
Management systems are certified according to ISO 9001:2015, ISO14001:2015 and ISO 45001:2018

PHYSICAL PROPERTIES OF THE PRODUCT

Product properties can be found on the manufacturer website at https://sakumetall.ee/uksetehas

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at https://sakumetall.ee.

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, kg	Post-consumer %	Renewable %	Country Region of origin
Carbon steel (zinc coated)	24,40	54	0	EU & non-EU
Stone wool	8,98	0	0	EU
Gypsum	4,15	0	0	EU
Coating powder	0,58	0	0	EU
Adhesive	0,35	0	0	EU
Seals	0,18	0	0	EU & non-EU
Hinges and other metal fixings	0,97	54	0	EU & non-EU
Wooden packaging	3,56	0	100	EU
Plastic packaging	0,24	0	0	EU

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

Door production starts with sheet metal processing, which includes punching and bending. For good weathering resistance, only zinc coated steel is used.
Fabricated details are assembled on different production lines to door leaf and door frame. Door leaf is usually made of two sheet metal sides and between are stone wool and gypsum board. Precise components and their location depend greatly on desired characteristics. Although, different door models may look the same, they are not same internally.
For adding structural strength stone wool, gypsum board and sheet metal sides are cohered using adhesive. After that door leaf has its final shape and size. Next step is riveting all metal bits and compressing door in the heated press, where it stays approximately 30 minutes in 60°C to cure adhesive.

When door leaf and frame are ready, they are assembled into one for quality control. Followed by surface treatment and powder coating. For that, door leaf and frame have to be separated again. After powder coating, door is assembled again and is going to final assembly where seals and other small parts are attached to door leaf or frame. Last steps are final quality control, packing and stacking.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Transportation distances from the production site gate to the installation site have been calculated using most likely scenarios 40% to Estonia, 30% to Finland and 30% to Sweden. Average distance is 180 km by lorry and 153 km by ferry. Vehicle capacity utilization volume factor is assumed to be 100% which means full load. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients. Transportation does not cause losses as product are packaged properly.

In the installation, energy consumption is assumed negligible as no machinery is needed for installation. There is no loss on site during construction activities. Installation materials are negligible and not included in this assessment.
Installation module includes waste treatment of packaging waste as well as biogenic CO2 released from wood pallets.

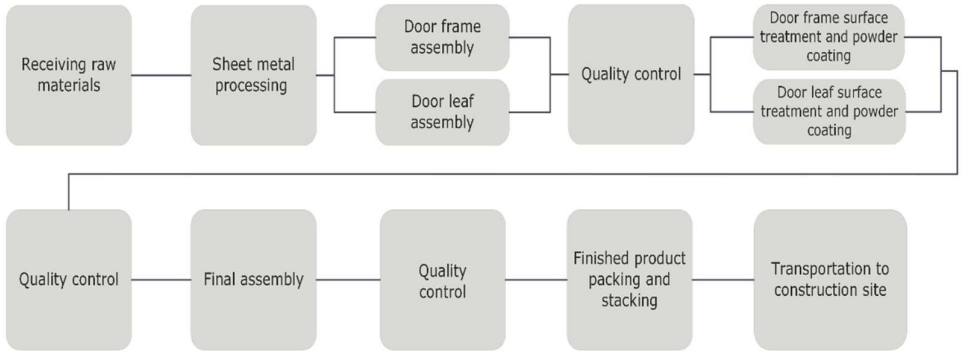
PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.
Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

At the end of life, in demolition phase, it is assumed that 100% of doors are removed and collected as separate waste (C1) and sent (C2) to closest recycling facility (C3).
It is assumed that materials are separated and 95% steel is sent for recycling. 5% of steel goes to the landfill with other inert material (C4). Rest of waste is incinerated (C4).
As steel is fully recyclable, it is recycled into raw material which can replace virgin material (D). Packaging material is incinerated for co-production of electricity and heat (D).

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2021

DECLARED AND FUNCTIONAL UNIT

Declared unit	1,0 m x 1,0 m. It is in accordance with EN 17213. The standard door used for the calculations is 1,23 m x 2,18 m. Surface area of said door is 2,6814 m2, which were used to obtain information for 1 m2 of the product.
Mass per declared unit	39.61 kg

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	1.6043

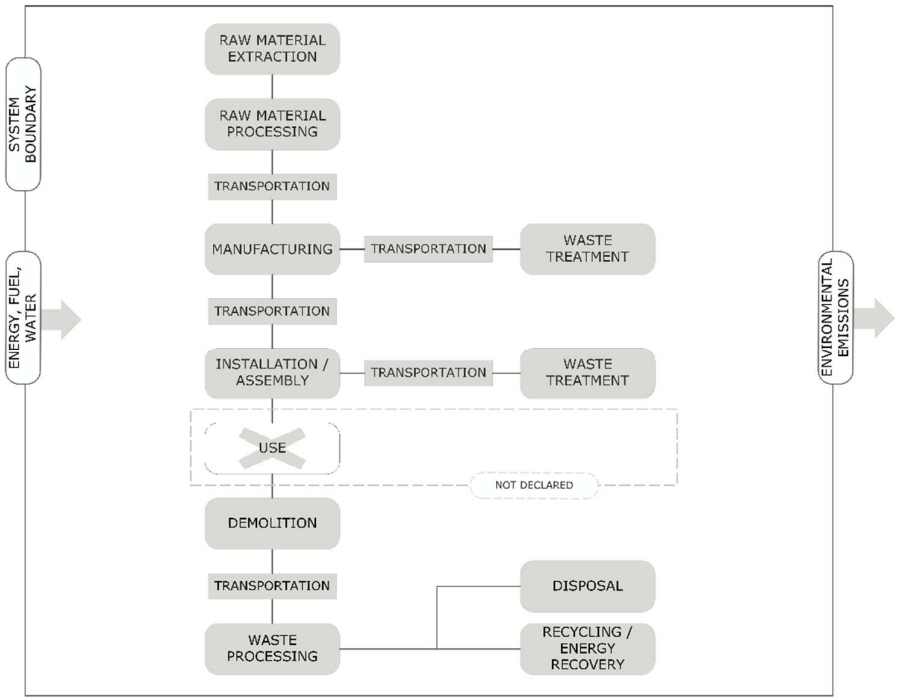
SYSTEM BOUNDARY

This EPD covers the *cradle to gate with options* scope with following modules; A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), A4 (Transport), A5 (Assembly) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Geography, by two-letter ISO country code or regions. The International EPD System only.																		
EU	EU	EU	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA



The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

For easier modelling and because of lack of accuracy in available modelling resources few constituents under 0,1% of product mass are excluded. These include some ancillary materials which are all present in the product only in very small amounts and have no serious impact on the emissions of the product.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order;

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g. mass, volume) when the difference in revenue is small.

3. Allocation should be based on economic values.

All input data used in this assessment that Saku Metall has influence over are plant-specific data for the production year 2021.

Module A1: Co-product allocation is applied to raw steel and off-cuts that are sold as scrap. Allocation is based on economic values.
Module A3: During normal production, there are a lot of different products, mainly doors or products related to doors, produced in the factory. Therefore, electricity, natural gas, LPG and water used are allocated on yearly sums of produced products by volume and used energy.

Module C1: It is assumed that no machinery is used for demolition process due to that, there is no energy consumption.
Module C2: It is assumed that the product does not lose any mass during its usage and at the end of life is sent to the closest recycling facility with estimated average distance 50 km.

Module A2 and C2: Transportation is assumed to be lorry with a fill rate 100%. In reality, it may vary but as role of transportation emissions in total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to serve the needs of other clients.
Module C3: Steel as a primary material in the product is fully recyclable. It is assumed that materials are separated and 95% of steel is recycled. Remaining 5% is assumed to be mixed with other materials and sent to landfill.
Module C4: It is assumed that gypsum and stone wool is sent to landfill and rubber seals are incinerated without energy recovery. Powder coat and adhesive is incinerated in steel recycling plant without energy recovery.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

AVERAGES AND VARIABILITY

Primary data represents the manufacturing of 7 different doors. The data was used to calculate weighted average impacts of said doors. The weighted average of total GWP in modules A1-A3 is 109 kg CO2e. The variations of total GWP in A1-A3 is from 107 kg CO2e for product Model 1 to 139 kg CO2e for product Model 7.
The primary data was averaged by calculating a weighted average of the products consumption of raw materials, energy and production of wastes. The production amount mass shares per each product was used in the weighing.

The International EPD System additional data requirements

Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

Supply-chain specific data for GWP-GHG	>95 %
Variation in GWP-GHG between products	-2, +28 %
Variation in GWP-GHG between sites	Not relevant %

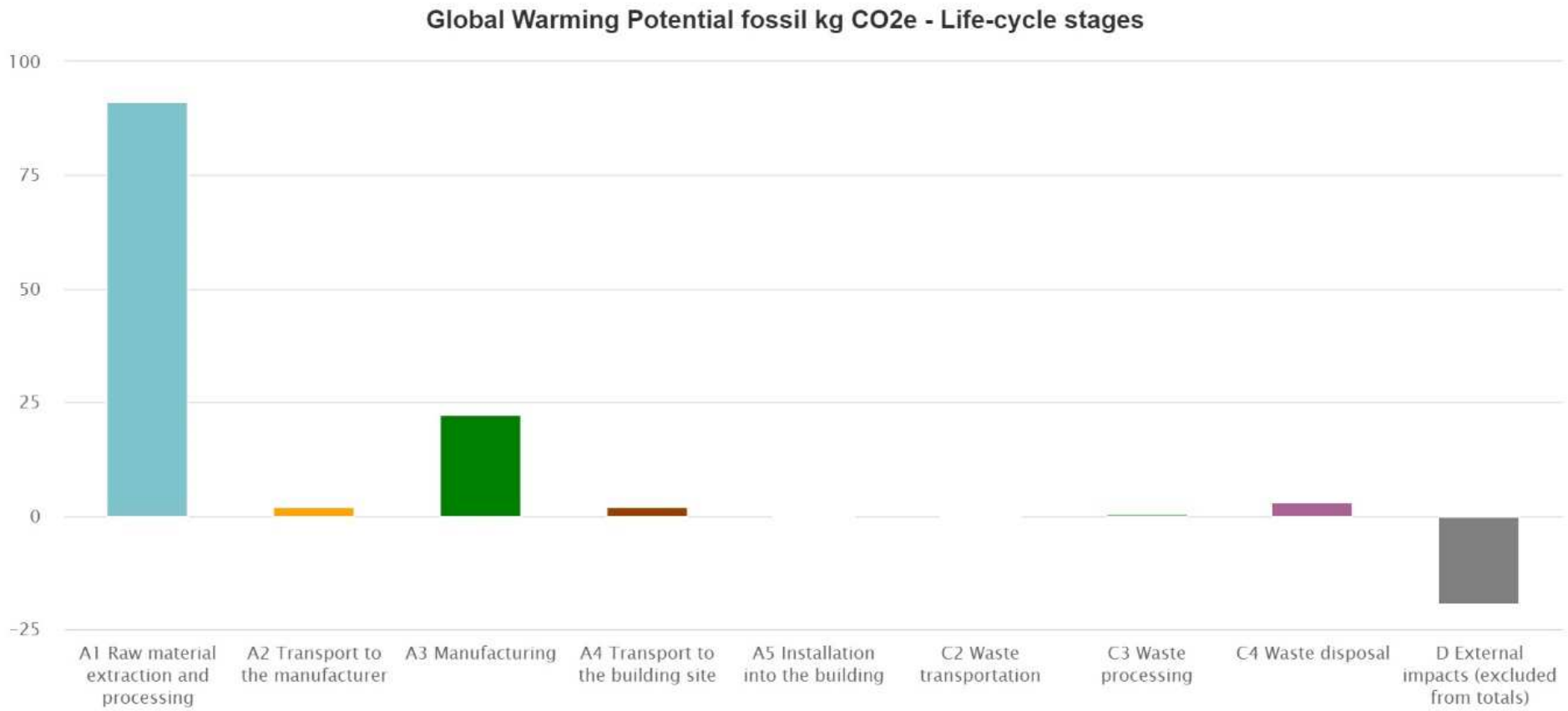
ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total	kg CO_2e	9,11E1	2,02E0	1,63E1	1,09E2	2,02E0	6,02E0	MND	MND	MND	MND	MND	MND	MND	0E0	1,8E-1	5,61E-1	2,96E0	-1,42E1
GWP – fossil	kg CO_2e	9,14E1	2,02E0	2,21E1	1,16E2	2,03E0	1,37E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,8E-1	5,95E-1	2,94E0	-1,94E1
GWP – biogenic	kg CO_2e	-3,73E-1	1,25E-3	-5,86E0	-6,23E0	5,31E-4	5,88E0	MND	MND	MND	MND	MND	MND	MND	0E0	1,31E-4	-3,41E-2	1,75E-2	5,25E0
GWP – LULUC	kg CO_2e	8,11E-2	5,22E-4	4,78E-3	8,64E-2	9,11E-4	1,27E-4	MND	MND	MND	MND	MND	MND	MND	0E0	5,42E-5	6,75E-4	2,16E-4	-5,72E-3
Ozone depletion pot.	kg CFC_{-11}e	6,71E-6	4,6E-7	3,07E-6	1,02E-5	4,43E-7	1,3E-8	MND	MND	MND	MND	MND	MND	MND	0E0	4,23E-8	8,54E-8	1,02E-7	-7,31E-7
Acidification potential	mol H^+e	1,22E0	7,98E-3	1,1E-1	1,34E0	2,92E-2	4,97E-4	MND	MND	MND	MND	MND	MND	MND	0E0	7,56E-4	7,21E-3	3,1E-3	-1,04E-1
EP-freshwater[3)]	kg Pe	5,31E-3	1,5E-5	3,57E-4	5,68E-3	1,4E-5	4,86E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,46E-6	4,1E-5	2,81E-5	-1,27E-3
EP-marine	kg Ne	1,17E-1	2,34E-3	1,99E-2	1,39E-1	7,54E-3	1,15E-4	MND	MND	MND	MND	MND	MND	MND	0E0	2,28E-4	1,59E-3	6,22E-4	-2,12E-2
EP-terrestrial	mol Ne	4,11E0	2,58E-2	1,94E-1	4,33E0	8,37E-2	1,29E-3	MND	MND	MND	MND	MND	MND	MND	0E0	2,52E-3	1,85E-2	7,3E-3	-2,41E-1
POCP ("smog")	kg NMVOCe	4,23E-1	8,39E-3	6,33E-2	4,95E-1	2,24E-2	3,99E-4	MND	MND	MND	MND	MND	MND	MND	0E0	8,09E-4	5,04E-3	2,58E-3	-1,09E-1
ADP-minerals & metals	kg Sbe	1,09E-1	2,81E-5	3,66E-5	1,09E-1	4,01E-5	1,5E-6	MND	MND	MND	MND	MND	MND	MND	0E0	3,07E-6	3,29E-5	4,62E-6	-3,58E-4
ADP-fossil resources	MJ	1,14E3	3,04E1	3,62E2	1,53E3	2,9E1	1,76E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,8E0	8,24E0	5,73E0	-1,68E2
Water use[2)]	m^3e depr.	4,62E1	1,06E-1	3,77E0	5E1	8,1E-2	2,75E-2	MND	MND	MND	MND	MND	MND	MND	0E0	1,04E-2	1,17E-1	2,27E-1	-9,32E0

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO_4e.


Global Warming Potential fossil kg CO2e - Life-cycle stages
100
75
50
25
0
-25
A1 Raw material extraction and processing
A2 Transport to the manufacturer
A3 Manufacturing
A4 Transport to the building site
A5 Installation into the building
C2 Waste transportation
C3 Waste processing
C4 Waste disposal
D External impacts (excluded from totals)

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1,06E2	3,48E-1	1,77E1	1,24E2	3,36E-1	1,52E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,52E-2	1,29E0	2,18E-1	-5,51E1
Renew. PER as material	MJ	0E0	0E0	5,64E1	5,64E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	1,06E2	3,48E-1	7,41E1	1,81E2	3,36E-1	1,52E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,52E-2	1,29E0	2,18E-1	-5,51E1
Non-re. PER as energy	MJ	1,14E3	3,04E1	3,5E2	1,52E3	2,9E1	1,76E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,8E0	8,24E0	5,73E0	-1,68E2
Non-re. PER as material	MJ	0E0	0E0	1,15E1	1,15E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of non-re. PER	MJ	1,14E3	3,04E1	3,62E2	1,53E3	2,9E1	1,76E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,8E0	8,24E0	5,73E0	-1,68E2
Secondary materials	kg	1,81E1	0E0	3,75E-3	1,81E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	7,9E0
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Use of net fresh water	m^3	1,39E0	5,74E-3	1,81E-1	1,58E0	4,2E-3	5,13E-4	MND	MND	MND	MND	MND	MND	MND	0E0	5,83E-4	3,36E-3	6,24E-3	-1,37E-1

6) PER = Primary energy resources

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2,27E1	3,1E-2	4,25E-1	2,31E1	3E-2	7,33E-3	MND	MND	MND	MND	MND	MND	MND	0E0	2,72E-3	0E0	1,9E-1	-7,64E0
Non-hazardous waste	kg	2,72E2	2,76E0	1,12E1	2,86E2	1,5E0	2,94E-1	MND	MND	MND	MND	MND	MND	MND	0E0	3,01E-1	0E0	1,53E1	-6,09E1
Radioactive waste	kg	2,81E-3	2,08E-4	1,53E-3	4,55E-3	2E-4	9,15E-6	MND	MND	MND	MND	MND	MND	MND	0E0	1,92E-5	0E0	2,34E-5	-6,37E-5

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	2,41E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	5,55E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

ENVIRONMENTAL IMPACTS – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO_2e	9,14E1	2,02E0	2,21E1	1,16E2	2,03E0	1,37E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,8E-1	5,95E-1	2,94E0	-1,94E1

8) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator Is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity, Estonia, residual mix, LCA study for country specific electricity mixes based on IEA, OneClickLCA 2021, year 2019
Electricity CO_2e / kWh	0,79
District heating data source and quality	Heat production, natural gas, at boiler condensing modulating >100kw (Reference product: heat, district or industrial, natural gas), Europe, Ecoinvent 3.6, year 2019
District heating CO_2e / kWh	0,2308

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EPD. General Programme Instructions of the international EPD® system. Version 4.0

Carbon steel door without glazing LCA background report 06.04.2022

ABOUT THE MANUFACTURER

Saku Metall Uksetehas designs, develops, manufactures and sells metal doors. Providing secure and durable door solutions since 1991.

Saku Metall Uksetehas has a large variety of steel doors to fit any technical requirement - up to RC4 in security class, up to EI120 in fire resistance class and up to 45 dB in sound insulation. One of the key strengths is the ability to offer both large quantities and custom solutions. The manufacturer takes a personal approach towards every project to find the best solution together with the customer.

The product range consists of solid steel doors, steel profile doors, steel profile walls, steel profile facades, sliding doors, sectional & high-speed roller doors, steel hatches and special doors.

Additionally, Saku Metall Uksetehas sells locks, carrier systems for sliding doors, and automatic door opening and closing devices and other door accessories. Maintenance and repair services are available in domestic and Finnish markets.

Saku Metall Uksetehas is a part of Saku Metall Group and is 100% Estonian-owned. Saku Metall Uksethas has a subsidiary located in Finland – Saku Metall OY.

LCA Carbon steel door without glazing

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	Saku Metall Uksetehas AS
EPD author	Janno Jegers, Saku Metall AS
EPD verifier	Silvia Vilčeková, Silcert, Ltd.
EPD program operator	The International EPD System
Background data	This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for Construction products

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Silvia Vilčeková, Silcert, Ltd.
EPD verification started on	2022-04-18
EPD verification completed on	2022-05-09
Supply-chain specific data %	>95
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Janno Jegers, Saku Metall AS
EPD author training completion	2021-11-21
EPD Generator module	Construction products
Independent software verifier	Ugo Pretato, Studio Fieschi & soci Srl.
Software verification date	2021-05-11

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

VERIFICATION AND REGISTRATION (ENVIRONDEC)

ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.11
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Third party verifier	Silvia Vilčeková, Silcert, Ltd.
	Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up during EPD validity involves third party verifier	☐ yes ☑ no

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ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	8,82E1	2E0	2,17E1	1,12E2	2,02E0	1,34E-1	MND	MND	MND	MND	MND	MND	MND	0E0	1,78E-1	5,85E-1	2,92E0	-1,86E1
Ozone depletion Pot.	kg CFC_{-11}e	6,37E-6	3,65E-7	2,4E-6	9,14E-6	3,52E-7	1,16E-8	MND	MND	MND	MND	MND	MND	MND	0E0	3,36E-8	7,25E-8	1,28E-7	-6,36E-7
Acidification	kg SO_2e	5,66E-1	4,23E-3	9,24E-2	6,63E-1	2,17E-2	3,42E-4	MND	MND	MND	MND	MND	MND	MND	0E0	3,66E-4	4,48E-3	2,29E-3	-8,47E-2
Eutrophication	kg PO_4^3e	2,21E-1	8,45E-4	1,49E-2	2,37E-1	2,68E-3	2,94E-4	MND	MND	MND	MND	MND	MND	MND	0E0	7,4E-5	1,83E-3	1,34E-3	-5,54E-2
POCP (“smog”)	kg C_2H_4e	4,29E-2	3,13E-4	4,85E-3	4,8E-2	6,62E-4	2,34E-5	MND	MND	MND	MND	MND	MND	MND	0E0	2,32E-5	2,1E-4	4,92E-4	-1,31E-2
ADP-elements	kg Sbe	1,09E-1	2,81E-5	3,66E-5	1,09E-1	4,01E-5	1,5E-6	MND	MND	MND	MND	MND	MND	MND	0E0	3,07E-6	3,29E-5	4,62E-6	-3,58E-4
ADP-fossil	MJ	1,14E3	3,04E1	3,62E2	1,53E3	2,9E1	1,76E0	MND	MND	MND	MND	MND	MND	MND	0E0	2,8E0	8,24E0	5,73E0	-1,68E2